

Multifunctional Aerogel Thermal Protection Systems for Hypersonic Vehicles, Phase II

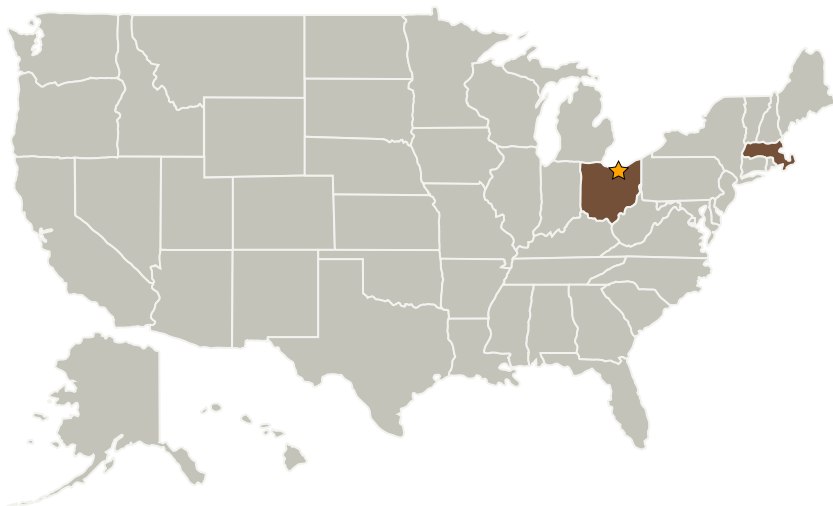
Completed Technology Project (2009 - 2012)



Project Introduction

The overall objective of the Phase II project is to develop lightweight reinforced aerogel materials for use as the core structural insulation material in multifunctional thermal protection systems for next generation hypersonic vehicles. During this Phase II SBIR project, we will build on the successful results of the Phase I effort by optimizing the aerogel preparation methods and conducting a complete study of aerogel properties and capabilities. During the Phase II effort, the aerogel thermal conductivities and mechanical properties will be optimized for use as multifunctional TPS materials for hypersonic vehicles including the capability of withstanding very high heating rates. We will prepare these aerogels by methods that can be scaled-up and manufactured economically. Any issues associated with scaling-up production of the rigid aerogel panels will be determined, and a prototype thermal protection system will be fabricated and tested. Successful completion a Phase II program will result in an optimized formulation for the aerogel component of multifunctional TPS, and performance data will be available for further commercialization efforts specific to the aerospace industry. We believe the Phase II Program will advance the state of the art for the development of the next generation thermal protection system materials.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Aspen Aerogels, Inc.	Supporting Organization	Industry	Northborough, Massachusetts

Primary U.S. Work Locations	
Massachusetts	Ohio

Project Transitions

**February 2009:** Project Start**January 2012:** Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX15 Flight Vehicle Systems
 - └ TX15.1 Aerosciences
 - └ TX15.1.3 Aeroelasticity